



# UNITED STATES PATENT AND TRADEMARK OFFICE

*W*  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,755	11/12/2004	Ali Tavassoli	02-1288-A	3100
20306 7590 06/08/2007 MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP 300 S. WACKER DRIVE 32ND FLOOR CHICAGO, IL 60606			EXAMINER SHIAO, REI TSANG	
			ART UNIT 1626	PAPER NUMBER
			MAIL DATE 06/08/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/501,755

**Applicant(s)**

TAVASSOLI ET AL.

**Examiner**

Rei-tsang Shiao, Ph.D.

**Art Unit**

1626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 9-13 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 14 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 1/16/07.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

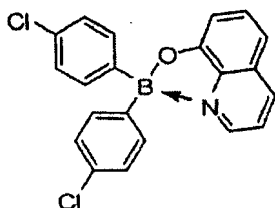
1. This application claims benefit of the provisional application: 60/347,811 with a filing date 01/10/2002.
2. Claims 1-16 are pending in the application.

### *Information Disclosure Statement*

3. Applicant's Information Disclosure Statement, filed on January 16, 2007 has been considered. Please refer to Applicant's copy of the 1449 submitted herein.

### *Responses to Election/Restriction*

4. Applicant's election of Group I claims 1-8, 14 and 16, in part, in the reply filed on May 04, 2007, is acknowledged. Applicant's election of the compound, i.e.,



as the single species is also acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-16 are pending in the application.

The scope of the invention of the elected subject matter is as follows.

Claims 1-8, 14 and 16, in part, drawn to processes of making compounds of

Art Unit: 1626

formula (I), wherein the variable A represents O thereof; the variable W represents Cp and p is 0; the variable R<sup>b</sup> and R<sup>c</sup> are connected by an aromatic ring phenyl structure thereof and the variable R<sup>c</sup> and R<sup>e</sup> are connected by an aromatic ring phenyl structure thereof; the variable Ar<sup>1</sup> and Ar<sup>2</sup> independently represents thienyl or aryl thereof, and the substitute cycloalkyl of the variable R<sup>a</sup>-R<sup>e</sup>, Ar<sup>1</sup> and Ar<sup>2</sup> independently does not contain a hetero atom (i.e., sulfur, oxygen or nitrogen), and their prepared compounds.

Claims 1-8, 14 and 16, in part, embraced in above elected subject matter, are prosecuted in the case. Claims 1-8, 14 and 16, in part, not embraced in above elected subject matter, and claims 9-13 and 15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

The requirement is still deemed proper.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-8, 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Yuan et al. publication, Youji Huaxue (1989), 9(3): 226-9, see CAS: 112:139083.

Applicants claim processes of making compounds of formula (I) by reacting compounds of formula (III) with compounds of formula (II), see claim 1. Dependent

claims 2-8, 14 and 16 further limit a number of reaction conditions, i.e., the reaction ratio between compounds of formula (III) and compounds of formula (II).

Yuan et al. disclose a number of processes for preparing diphenylboron 8-hydroxyquinoline compounds, see reaction schemes No. 1-4 and 10-12. Yuan et al. processes clearly anticipate the instant processes by reacting compounds of formula (III) with compounds of formula (II) to obtain compounds of formula (I), wherein the variable A represents O thereof; the variable W represents Cp and p is 0; the variable R<sup>b</sup> and R<sup>c</sup> are connected by a substituted aromatic ring phenyl (i.e., fluorophenyl, methoxyphenyl), and the variable R<sup>c</sup> and R<sup>e</sup> are connected by a substituted aromatic ring phenyl (i.e., fluorophenyl, methoxyphenyl); the variable Ar<sup>1</sup> and Ar<sup>2</sup> independently represents aryl or substituted aryl (i.e., fluorophenyl, methoxyphenyl), or the variable R<sup>a</sup>-R<sup>f</sup> of formula (I) or (II) independently represents hydrogen, halogen, lower alkyl (i.e., ethyl, propyl, or butyl), substituted carboxylic acid.

The processed product of Yuan et al. also clearly anticipate the instant compounds of formula (I) (i.e., claim 14), wherein the variable A represents O thereof; the variable W represents Cp and p is 0; the variable R<sup>b</sup> and R<sup>c</sup> are connected by a substituted aromatic ring phenyl (i.e., fluorophenyl, methoxyphenyl), and the variable R<sup>c</sup> and R<sup>e</sup> are connected by a substituted aromatic ring phenyl (i.e., fluorophenyl, methoxyphenyl); the variable Ar<sup>1</sup> and Ar<sup>2</sup> independently represents aryl or substituted aryl (i.e., fluorophenyl, methoxyphenyl), or R<sup>a</sup>-R<sup>f</sup> of formula (I) or (II) independently represents hydrogen, halogen, lower alkyl (i.e., ethyl, propyl, or butyl).

Art Unit: 1626

7. Claims 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Patel's US 5,348,948.

Applicants claim processed compounds of formula (I), see claim 14 and 16.

Patel's '948 disclose a number of compounds, see compounds in the table in column 6. Patel's compounds clearly anticipate the instant compounds of formula (I), wherein the variable A represents O thereof; the variable W represents Cp and p is 0; the variable R<sup>b</sup> and R<sup>c</sup> are connected by a substituted aromatic ring phenyl (i.e., methylphenyl, ethylphenyl, chlorophenyl, bromophenyl, nitrophenyl), and the variable R<sup>c</sup> and R<sup>e</sup> are connected by a substituted aromatic ring phenyl (i.e., methylphenyl, ethylphenyl); the variable Ar<sup>1</sup> and Ar<sup>2</sup> independently represents aryl (i.e., phenyl) or substituted aryl (i.e., fluorophenyl, methylphenyl, or butylphenyl). The 11<sup>th</sup>, 17<sup>th</sup> and 29<sup>th</sup> compounds of the table specifically read on the instant compounds No. 7, 9, 21, and 25 of claim 16.

8. Claims 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Imazaki et al. CAS: 133:144898; Torres et al. CAS: 120:332485; Liu et al. CAS: 115:219486; Yuan et al. CAS: 109:54817; Yu et al. CAS: 114:143497 or Rettig et al. CAS: 81:128040.

Applicants claim processed compounds of formula (I), see claim 14 and 16.

Imazaki et al. disclose a number of compounds, see RN: 29190-60-1, 52997-17-8, 132722-17-9, 137001-21-9, or 159097-99-1.

Torres et al. disclose a compound, see RN: 52997-17-8.

Liu et al. disclose two compounds, see RN: 137001-20-8 or 137001-21-9.

Art Unit: 1626

Yuan et al. disclose a compound, see RN: 61731-73-5.

Yu et al. disclose four compounds, see RN: 29190-60-1, 74344-31-3, 132722-11-3, or 132722-17-9.

Rettig et al. disclose a compound, see RN: 25610-36-0.

The above compounds of the references clearly anticipate the instant compounds of formula (I), wherein the variable A represents O thereof; the variable W represents Cp and p is 0; the variable R<sup>b</sup> and R<sup>c</sup> are connected by an aromatic ring phenyl; and the variable R<sup>c</sup> and R<sup>e</sup> are connected by an aromatic ring phenyl or substituted aryl (i.e., methylphenyl); the variable Ar<sup>1</sup> and Ar<sup>2</sup> independently represents thienyl, aryl (i.e., phenyl) or substituted aryl (i.e., fluorophenyl, methoxyphenyl, or chlorophenyl), or R<sup>a</sup>-R<sup>f</sup> of formula (I) independently represents hydrogen, halogen (i.e., fluoro).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

**10.** Claims 1-8, 14 and 16 are rejected under 35 U.S.C. 103(a) as being obvious over Yuan et al. publication, Youji Huaxue (1989), 9(3): 226-9, see CAS: 112:139083.

Applicants claim processes of making compounds of formula (I) by reacting compounds of formula (III) with compounds of formula (II), see claim 1. Dependent claims 2-8, 14 and 16 further limit a number of reaction conditions, i.e., the reaction ratio between compounds of formula (III) and compounds of formula (II).

**Determination of the scope and content of the prior art (MPEP §2141.01)**

Yuan et al. disclose a number of processes for preparing diphenylboron 8-hydroxyquinoline compounds, see reaction schemes No. 1-4 and 10-12.



**Determination of the difference between the prior art and the claims (MPEP**

**§2141.02)**

The difference between the instant claims and Yuan et al. is that the variable Ar<sup>1</sup> or Ar<sup>2</sup> of the instant claims represents aryl or thienyl, while Yuan et al. represents aryl at the same position. Yuan et al. processes overlap with the instant invention.

**Finding of prima facie obviousness-rational and motivation (MPEP §2142-2143)**

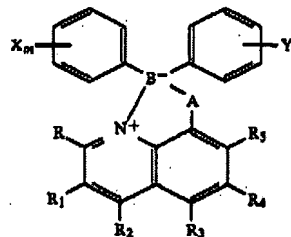
One having ordinary skill in the art would find the instant claims 1-8, 14 and 16 prima facie obvious **because** one would be motivated to employ the processes of Yuan et al. to obtain the instant compounds of formula (I) by reacting compounds of formula (II) with compounds of formula(III). However, the Courts have decided per *In re Boesch*, 205 USPQ 215 (1980), that the optimization of variables, such as pH and molar ratios, in a known process is prima facie obvious. Therefore, the claimed process would have been suggested to one skilled in the art. Therefore dependent claims 2-8, 14 and 16 are also rejected along with claim 1 under 35 U.S.C. 103(a).

The motivation to obtain the claimed processes derives from known Yuan et al. processes would possess similar yields to that which is claimed in the reference.

**11.** Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being obvious over Patel's US 5,348,948.

Applicants claim processed compounds of formula (I), see claim 14 and 16.

**Determination of the scope and content of the prior art (MPEP §2141.01)**



Patel's '948 disclose compounds of the formula, i.e.,  
wherein the variable A is O or S; the variable X or Y independently represents hydrogen, halogen, alkoxy, alkyl, or haloalkyl, the variable R, R<sup>1</sup>-R<sup>5</sup> independently represents hydrogen, halogen, alkoxy, alkyl, or haloalkyl, cyano, nitro, see columns 6 and 11-12. The 11<sup>th</sup>, 17<sup>th</sup> and 29<sup>th</sup> compounds of the table in column 6 specifically read on the instant compounds No. 7, 9, 21, and 25 of claim 16.

**Determination of the difference between the prior art and the claims (MPEP §2141.02)**

The difference between the instant claims and Patel's is that the variable Ar<sup>1</sup> or Ar<sup>2</sup> of the instant claims represents aryl or thienyl, while Patel's represents aryl at the same position. Patel's compounds overlap with the instant invention.

**Finding of prima facie obviousness-rational and motivation (MPEP §2142-2143)**

One having ordinary skill in the art would find the instant claims 14 and 16 prima facie obvious **because** one would be motivated to employ the compounds of Patel's to obtain the instant compounds of formula (I), wherein the variable A represents O thereof; the variable W represents Cp and p is 0; the variable R<sup>b</sup> and R<sup>c</sup> are connected by an aromatic ring phenyl structure thereof and the variable R<sup>c</sup> and R<sup>e</sup>

Art Unit: 1626

are connected by an aromatic ring phenyl structure thereof; the variable  $Ar^1$  and  $Ar^2$  independently represents thienyl or aryl thereof, and the substitute cycloalkyl of the variable  $R^a-R^e$ ,  $Ar^1$  and  $Ar^2$  independently does not contain a hetero atom (i.e., sulfur, oxygen or nitrogen).

The motivation to obtain the claimed compounds derives from known Patel's compounds would possess similar activity (i.e., treating diseases) to that which is claimed in the reference.

### ***Claim Objections***

**12.** Claims 1-8, 14 and 16 are objected to as containing non-elected subject matter, i.e., heteroaromatic, heteroaliphatic ring,  $Ar^1$  or  $Ar^2$  representing cycloalkyl having hetero atoms selected from sulfur, oxygen, and nitrogen, the compounds No. 3-6, 10-16, and 29-37 of claim 16, etc. It is suggested that applicants amend the claims to the scope of the elected subject matter as defined on the page 2 *supra*.

**13.** Claim 3 is objected to as containing a typographic error "formula III". Replacement of the term "formula III" with the term "formula II" would obviate the objection.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rei-tsang Shiao whose telephone number is (571) 272-0707. The examiner can normally be reached on 8:30 AM - 5:00 PM.

Art Unit: 1626

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph K. McKane can be reached on (571) 272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rei-tsang Shiao, Ph.D.  
Patent Examiner  
Art Unit 1626

June 05, 2007